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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,037	07/23/2001	Jan Louis Josephina Servaes	Q65151	2356

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EXAMINER

BRINEY III, WALTER F

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/910,037

Applicant(s)

SERVAES ET AL.

Examiner

Walter F Briney III

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-10 is/are allowed.
- 6) ☒ Claim(s) 2-4, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 2-4, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinberg (US Patent 5,038,375) in view of Steffes et al. (Electronic Design article, 19 April 1999).**

Claim 2 is limited to a *broadband line driver*. Sinberg discloses a telephonic line-driving amplifier (figure 6, element A1) (I.E. *an amplifying device*). Figure 6 clearly depicts that the amplifier includes both *an input* and *an output*. Also included is an isolating transformer (i.e. *a transforming device*) coupled to the output of the amplifier and forming a current path from the output to ground (i.e. *coupled in series with the output of the amplifying device*). Furthermore, figure 6 depicts that the transformer is part of a feedback loop to the input of the amplifier (i.e. *the transforming device is located in a feedback loop that couples the output of the amplifying device to the input of the amplifying device*). While Sinberg discloses an isolating transformer coupled to the output of a line-driving amplifier, however, the design parameters of the driver and transformer are not disclosed. Therefore, Sinberg anticipates all limitations of the claim with the exception *that the transforming device has a transformation ratio which is higher than 1:2*.

Steffes teaches that line-driver design that includes isolation transformers requires winding ratio choice early on and as an integral step toward the entire design process, and that higher winding ratios (see table, includes turns ratios of 2.5, 3, 3.5, and 4) (i.e. *higher than 1:2*) allow lower voltage components to be used in the line driver, which results in higher integration of components, which reduces manufacturing costs. As part of a design tradeoff it would have been obvious to one of ordinary skill in the art to select a turns ratio higher than 1:2 as taught by Steffes so that a lower supply voltage would be necessitated, the lower supply voltage requiring lower voltage components, whose small size increases integration allowing more components to be packaged into small areas. Also see the proceeding section entitled Response to Arguments for treatment of the applicant's instant remarks.

Claim 3 is limited to *the broadband line driver according to claim 2*, as covered by Sinberg. As depicted in figure 6, Sinberg discloses feedback amplifiers A2 and A3 and resistors R₄, R₆, R₈, and R₁₀ that form a feedback path from the output of the isolating transformer back to the input of the line-driving amplifier (A1) (i.e. *wherein a feedback circuit is connected between an output of the transforming device and the input of the amplifying device*). Therefore, Sinberg anticipates all limitations of the claim.

Claim 4 is limited to *the broadband driver according to claim 3*, as covered by Sinberg. As discussed in claim 3, the feedback path includes resistors (figure 6, R₄, R₆, R₈, R₁₀) (i.e. *wherein the feedback circuit comprises resistors*). Therefore, Sinberg anticipates all limitations of the claim.

Claim 11 is limited to *a digital subscriber line analogue front end comprising a broadband line driver according to claim 2*. Claim 2 has been shown to be obvious over Bingel in view of Steffes. Bingel discloses that the line-driving amplifier depicted is part of a digital subscriber line analogue front end (abstract; column 3, lines 26-54).

Therefore, Bingel in view of Steffes makes obvious all limitations of the claim.

Claim 12 is limited to *a method of operating a broadband line driver comprising an amplifying device according to claim 2*. Sinberg discloses a telephonic line-driving amplifier (figure 6, element A1). Figure 6 depicts that the output is transformed by an isolation transformer and fed back into the input of the amplifier. However, Sinberg does not disclose the design parameters of the driver and transformer. Therefore, Sinberg anticipates all limitations of the claim with the exception of *transforming the output voltage of the amplifying device to a higher value*.

Steffes teaches increasing the turns ratio above 1:1 (see table) of an isolation transformer used in line driving applications to lower the power and voltage source requirements. By lowering the power source requirements (up to a ratio of 1.8) (page 56, column 3) less heat and noise effects take hold of the amplifier, and lowering the supply voltage (up to a ratio of about 3) (see table) reduces the size of the components needed, thus increasing integration. As part of the line-driver design tradeoff it would have been obvious to one of ordinary skill in the art at the time of the invention to use an isolation transformer with a winding ratio greater than 1:1 as taught by Steffes for the purpose of reducing power and voltage source requirements thereby reducing heat and noise effects while increasing the amount of integration possible.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

2. Claims 5-10 are allowed.

Claim 5 has been rewritten in independent form, and is allowable over the cited prior art for the reasons provided in the Office Action filed 25 August 2004.

Claims 6-10 are dependent on claim 5, and are allowable over the cited prior art for at least the same reasons.

Response to Arguments

3. Applicant's arguments, filed 28 October 2004, with respect to claims 2-4, 11, and 12 have been fully considered but they are not persuasive.

With respect to currently amended claim 2, the applicant alleges on page 6 of their instant response that Steffes teaches away from the invention; the examiner respectfully disagrees. Consider figure 6 of Sinberg, it is clear that the receive path, which includes amplifier A3, is not in the path of the received signal as shown in figures 1 and 5 of Steffes. It follows that Steffes third point (column 8, line 16 through column 9, line 8) regarding increased noise in the received signal are inapplicable to the amplifier disclosed by Sinberg.

Furthermore, even if Steffes third limitation was relevant to the disclosure of Sinberg, it does not teach away from the applicant's claimed invention. The statement "turns ratios up to four can be considered, but most systems work best at two or lower"

quite clearly indicates that Steffes intends to support a design with a transformer winding ratio up to four. As will be shown later, Steffes provides a specific example with a turns ratio of 3.2.

Regarding Steffes second point concerning the limits of high-turns ratios on bandwidth and distortion, it is submitted that both bandwidth and distortion quantities are design constraints (column 1, lines 39-47).

Furthermore, Steffes provides two design examples: a large-signal ADSL driver and a small-signal ADSL driver, Steffes even provides simulation results for both, depicted in figure 6. The small-signal ADSL driver specifically includes a turns ratio of 1:3.2 (column 21, lines 4-48). As such, the rejection stands in light of the above remarks.

With respect to dependent claims 3, 4, 11, and 12, the applicant has not provided any evidence separate from that provided with respect to independent claim 2 that the previous rejections were improper, therefore, the rejections stand in light of both the above remarks and any new grounds of rejection that were necessitated by amendment (i.e. claim 12).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F Briney III whose telephone number is 703-305-0347. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 703-305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SINH TRAN
SUPERVISORY PATENT EXAMINER

WFB
3/17/05